

Remarks

By this amendment, independent claims 1, 20, 37 & 38 are amended to more particularly point out and distinctly claim the subject matter of Applicants' invention. These amendments constitute a *bona fide* attempt by the Applicants to advance prosecution of this application and obtain allowance of certain claims and are in no way meant to acquiesce to the substance of the outstanding Office Action. Support for the amended language can be found throughout the application as filed. For example, reference page 12, line 6 – page 14, line 11, as well as the flowcharts of FIGS. 5-12 and the supporting discussion thereof. Additionally, claim 3 is amended to address the claim objections noted at page 2 of the Office Action and claims 3, 4, 6, 21, 22, 24 & 40 are amended (and claims 18, 36 and 39 are canceled without prejudice) in view of the amendments to their respective independent claims, and the new substantive rejection to claims 4 & 22 presented in the Office Action. No new matter is added to the application by any amendment presented. Claims 2-9, 11-17, 20-27, 29-35, 37, 38, 40 & 41 remain pending.

In the Office Action, claims 2, 4, 6-8, 14, 20, 22, 24-26, 32 & 36-41 were newly rejected under 35 U.S.C. §103(a) as being obvious over Lamport et al. (U.S. Patent No. 5,138,615; hereinafter Lamport) in view of Bracho et al. (U.S. Patent No. 5,870,605; hereinafter Bracho), while claims 3, 11, 16-17, 21, 29 and 33-34 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lamport in view of Bracho and further in view of Abe et al. (U.S. Patent Application No. 2003/0091049; hereinafter Abe) and claims 5, 9, 13, 23, 27 and 30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lamport in view of Bracho, and further in view of Iwamura et al. (U.S. Patent No. 6,396,814; hereinafter Iwamura). Each of these rejections is respectfully, but most strenuously, traversed to any extent deemed applicable to the amended independent claims presented herewith.

In one aspect, Applicants' invention is directed to a technique for reconfiguring a routing network that is part of a publish/subscribe system. This technique includes quiescing the routing network to preserve a first-in first-out delivery order quality to clients of data messages within the routing network. After quiescing the routing network, the technique includes reconfiguring the quiesced routing network while preserving the first-in first-out delivery order quality to clients of messages within the reconfigured routing network. In accordance with Applicants'

invention, a network reconfiguration approach is presented which ensures a preservation of first-in first-out delivery order of messages within the network to clients notwithstanding that the network has undergone reconfiguration. This first-in first-out delivery order quality of services of messages to clients refers to the order in which messages are placed into the publish/subscribe network, i.e., messages within the network are delivered in the order in which they are placed into the network, notwithstanding reconfiguration of the network.

An “obviousness” determination requires an evaluation of whether the prior art taken as a whole would suggest the claimed invention taken as a whole to one of ordinary skill in the art. In evaluating claimed subject matter as a whole, the Federal Circuit has expressly mandated that functional claim language be considered in evaluating a claim relative to the prior art. Applicants respectfully submit that the application of these standards to the independent claims presented herewith leads to the conclusion that the recited subject matter would not have been obvious to one of ordinary skill in the art based on the applied art.

Lamport describes a reconfiguration system for a high speed mesh connected local area network. In Lamport, the network provides automatic packet switching and routing between host computers coupled to the network. A plurality of cut-through, non-blocking switches are interconnected with one another and are coupled to the host computers by point-to-point duplex links. The reconfiguration system automatically reconfigures the network whenever a new link or switch is added to the network, and whenever a link or switch fails.

Upon initiation of reconfiguration during phase one, as described in Lamport, Col. 42, lines 26-47, all packets which the switch may be in the process of transmitting are cleared, and “stop flow” signals are sent to all hosts that are coupled to the switch. Next, the reconfiguration program clears all information in its port information array. When phase two begins, all information about the network’s topology that is derived from external sources is discarded because it may be incorrect.

In contrast to Lamport, Applicants’ reconfiguration technique includes quiescing the routing network to preserve a first-in first-out delivery order quality to clients of messages within the network. In Applicants’ technique, the messages that are preserved are already within the

routing network and a first-in first-out quality of message delivery is guaranteed, notwithstanding the occurrence of the reconfiguration process. This is expressly recited in the second element, wherein the reconfiguring the of the quiesced routing network is accomplished while preserving the first-in first-out delivery order quality to clients of messages within the reconfigured routing network. Again, first-in first-out delivery order quality in Applicants' invention refers to the first-in first-out launching order of messages within the network, for example, from a sending client to one or more receiving clients. This order is maintained in Applicants' invention notwithstanding the fact that the routing network itself undergoes reconfiguration while the messages are in transit. No similar functionality is taught or suggested by Lamport or the other applied art, either alone or in combination.

Without acquiescing to the "preferability" of maintaining queued data packets when a switch is temporarily unable to transmit packets (alleged in the Official Notice), Applicants respectfully submit that Lamport actually teaches away from maintaining queued data packets, and thus preserving any type of first-in first-out ordering of data messages, even at a switch level. This is because Lamport teaches clearing all packets upon initiation of reconfiguration. The clearing of all packets by Lamport is directly contrary to Applicants' preservation of data messages within the network, notwithstanding reconfiguration of the network. Further, Applicants respectfully submit that Applicants are preserving a first-in first-out delivery order quality to clients of data messages within the routing network. This delivery order quality of service is a higher order delivery quality which refers to the first-in first-out ordering of messages sent into the network for delivery to one or more clients, and does not refer to a first-in first-out ordering of messages at a particular switch. Applicants respectfully submit that their independent claims do not in fact recite functionality at a particular switch or router level, but rather recite a higher level protocol for the entire network that is to be reconfigured, wherein first-in first-out delivery order quality (of service) to clients of data messages within the routing network is maintained. The delivery order is for the entire network, while the data messages recited are already within the routing network. Thus, Applicants' claimed protocol is clearly distinct from any implication to be derived from combining Lamport with the Official Notice noted in the Office Action.

In view of the above, Applicants respectfully submit that their recited invention is not rendered obvious by Lamport, either alone or in combination with the Official Notice. The Office Action further acknowledges that Lamport does not disclose a publish/subscribe system which is now recited in the independent claims at issue. Bracho is cited in the Office Action for disclosing a publish/subscribe system for transmitting data messages over a network wherein control messages are transmitted within a network to facilitate the publish/subscribe function of the system and routing of data in the publish/subscribe system is content-based. Without acquiescing to the characterization of these teachings of Bracho, Applicants note that the deficiencies of Lamport, as described herein above, are not cured by Bracho with respect to “quiescing the routing network to preserve a first-in first-out delivery order quality to clients of data messages within the routing network, and reconfiguring the quiesced routing network, while preserving the first-in first-out delivery order quality to clients of messages within the reconfigured routing network,” as recited by the Applicants in independent claims 2, 20, 37 & 38, and hence the claims dependent therefrom. Therefore, all claims are believed to be in condition for allowance.

Regarding claims 3, 11, 16-17, 21, 29 & 34-35, the Office Action notes that the combination of Lamport in view of Bracho does not disclose sequencing nodes. Abe is cited for allegedly teaching rearranging a sequence of packets in a sequencing node. This characterization of the teachings of Abe is respectfully traversed to any extent deemed applicable to the functionality recited in the dependent claims at issue. In Applicants’ invention, the routing network of the publish/subscribe system comprises at least one of a log network or a sequencing network. The sequencing network sequences a message at a node of the routing network with other messages received by the network prior to delivery of the message to one or more clients of the network. This language further characterizes Applicants’ protocol for delivering messages within the network in a first-in first-out order to one or more clients thereof, which is recited in the independent claims. No similar protocol is taught or suggested by Abe. Further, certain of these dependent claims further recite the quiescing of control messages within the routing network, which includes quiescing any new logging acknowledgement message or sequencing acknowledgement message within the logging network or sequencing network, respectively. The Office Action does not address this aspect of Applicants’ claimed functionality. Since none

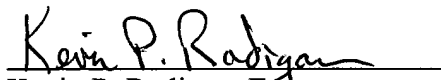
of the applied art teaches or suggests a similar protocol, Applicants respectfully request reconsideration and withdrawal of the obviousness rejection based thereon.

Regarding the rejection of claims 5, 9, 13, 23, 27 and 30, Applicants respectfully submit that these claims patentably distinguish over Lamport in view of Bracho in view of Iwamura for the reasons stated above in connection with their respective independent claims. The Office Action acknowledges that Lamport in view of Bracho does not disclose sending acknowledgements from child nodes to parent nodes in response to receiving a control message. Iwamura is cited for allegedly teaching this aspect of Applicants' recited protocol. Without acquiescing to this characterization, Applicants note that Iwamura does not teach or suggest any of the above-noted deficiencies of Lamport and/or Bracho and Abe when applied against the independent claims presented.

For all the above reasons, Applicants respectfully request withdrawal of all rejections under 35 U.S.C. §103, and issuance of a Notice of Allowability for pending claims 2-9, 11-17, 20-27, 29-35, 37, 38, 40 and 41.

Should the Examiner wish to discuss this application further, the Examiner is invited to telephone Applicants' below-listed representative.

Respectfully submitted,


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